Incorporating Corrigendum No. 1

Copper and copper alloys —

Plate, sheet, strip and circles for general purposes

The European Standard EN 1652:1997 has the status of a British Standard

 $ICS \ 77.150.30$



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National foreword

This British Standard is the English language version of EN 1652:1997. Together with BS EN 1653:1998 and BS EN 1654:1998 it supersedes BS 2870:1980 and BS 2875:1969 which are withdrawn.

The UK participation in its preparation was entrusted by Technical Committee NFE/34, Copper and copper alloys, to Subcommittee NFE/34/1, Wrought and unwrought copper and copper alloys, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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Cross-references

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This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on 15 April 1998

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Descriptors: Copper, copper alloys, rolled products, metal plates, steel strips, blank, designation, chemical composition, mechanical properties, dimensions, dimensional tolerances, sampling, tests, verification

English version

Copper and copper alloys — Plate, sheet, strip and circles for general purposes

Cuivre et alliages de cuivre — Plaques, tôles, bandes et disques pour usages généraux Kupfer und Kupferlegierungen — Platten, Bleche, Bänder, Streifen und Ronden zur allgemeinen Verwendung

This European Standard was approved by CEN on 6 November 1997.

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CEN

European Committee for Standardization Comité Européen de Normalisation Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Ref. No. EN 1652:1997 E

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1 Scope

This European Standard specifies the composition, property requirements and tolerances on dimensions and form for copper and copper alloy plate, sheet, strip and circles for general purposes.

The sampling procedures, the methods of test for verification of conformity to the requirements of this standard, and the delivery conditions are also specified.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 1655, Copper and copper alloys — Declarations of conformity.

prEN 1976, Copper and copper alloys — Cast unwrought copper products.

EN 10002-1, Metallic materials — Tensile testing — Part 1: Method of test (at ambient temperature).

EN 10204, *Metallic products* — *Types of inspection documents*.

EN ISO 2624, Copper and copper alloys — Estimation of average grain size.

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ISO 1811-2, Copper and copper alloys — Selection and preparation of samples for chemical analysis — Part 2: Sampling of wrought products and castings.

ISO 6507-1, Metallic materials — Hardness test — Vickers test — Part 1: HV 5 to HV 100.

ISO 6507-2, Metallic materials — Hardness test — Vickers test — Part 2: HV 0,2 to less than HV 5.

ISO 7438, Metallic materials — Bend test.

ISO 7799, Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test.

ISO 8490, Metallic materials — Sheet and strip — Modified Erichsen cupping test.

NOTE Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 Definitions

For the purposes of this standard, the following definitions, based on ISO 197-3, apply:

3.1

plate

flat rolled product of rectangular cross-section with uniform thickness greater than $10\;\mathrm{mm}$

3.2

sheet

flat rolled product of rectangular cross-section with uniform thickness from 0,2 mm up to and including 10 mm, supplied in straight lengths, usually with sheared or sawn edges. The thickness does not exceed one tenth of the width

3.3

strip

flat rolled product of rectangular cross-section with uniform thickness from 0,1 mm up to and including 5,0 mm manufactured in coil and supplied in as sheared coils, traverse wound coils or cut to length, usually with slit edges. The thickness does not exceed one tenth of the width

3.4

circle

circular blank

4 Designations

4.1 Material

4.1.1 General

The material is designated either by a symbol or a number (see Tables 1 and 2).

4.1.2 Symbol

The material symbol designation is based on the designation system given in ISO 1190-1.

NOTE Although material symbol designations used in this standard might be the same as those in other standards using the designation system given in ISO 1190-1, the detailed composition requirements are not necessarily the same.

4.1.3 Number

The material number designation is in accordance with the system given in EN 1412.

4.2 Material condition

For the purposes of this standard, the following designations, which are in accordance with the system given in EN 1173, apply for the material condition:

- R... Material condition designated by the minimum value of tensile strength requirement for the product with mandatory tensile strength and elongation requirements;
- H... Material condition designated by the minimum value of hardness requirement for the product with mandatory hardness requirements;
- G... Material condition designated by the mid-range value of grain size requirement for the product with mandatory grain size and hardness requirements.

Exact conversion between material conditions designated R..., H... and G... is not possible. Material condition is designated by only one of the above designations.

4.3 Product

The product designation provides a standardized pattern of designation from which a rapid and unequivocal description of a product is conveyed in communication. It provides mutual comprehension at the international level with regard to products which meet the requirements of the relevant European Standard.

The product designation is no substitute for the full content of the standard.

The product designation for products to this standard shall consist of:

- denomination (plate, sheet, strip or circle);
- number of this European Standard (EN 1652);
- material designation, either symbol or number (see Tables 1 and 2);
- material condition designation (see Table 3);
- nominal dimensions:
 - plate: thickness \times width \times length [either "as manufactured" (M) or "fixed" (F) length] (see example 1);
 - sheet: thickness \times width \times length [either "as manufactured" (M) or "fixed" (F) length];
 - strip (in coils or on spools): thickness \times width;
 - strip (cut to length): thickness \times width \times length [either "as manufactured" (M) or "fixed" (F) length];
 - circles: thickness \times diameter (see example 2).

The derivation of a product designation is shown for plate in example 1 and another typical product designation is shown in example 2.

EXAMPLE 1:

Plate conforming to this standard, in material designated either Cu-OF or CW008A, in material condition H065, nominal thickness 14,25 mm, nominal width 350,5 mm, as manufactured length 1 200 mm, shall be designated as follows:

	Plate EN 1652 – Cu-OF – H065 – 14,25 × 35 or	50,5×1 200M
	Plate EN 1652 - CW008A - H065 - 14,25 × 3	<u>50,5×1 200M</u>
Denomination		
Number of this European Standar	d	
Material designation		
Material condition designation		
Nominal dimensions in millimetre	s	

EXAMPLE 2:

Circle conforming to this standard, in material designated either CuNi12Zn24 or CW403J, in material condition R550, nominal thickness 1,115 mm, nominal diameter 345,5 mm, shall be designated as follows:

Circle EN 1652 — CuNi12Zn24 — R550 — 1,115 × 345,5 or Circle EN 1652 — CW403J — R550 — 1,115 × 345,5